

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

Koichi Ashizawa et al

Art Unit: 1745

Appln. No.: 09/124,925

Ex: T. Dove

Filed

July 29, 1998

For

Current collector with penetrating holes of complicated shape for use in a secondary battery and manufacturing process thereof (as amended)

BRIEF ON APPEAL

Commissioner for Patents P.O. Box 1450 Alexandria, VA. 22202-3514

Sir:

Pursuant to the provisions of 37 CFR 1.192, submitted herewith is Applicant/Appellants' Brief on Appeal.

REAL PARTY IN INTEREST

The real party interest, that is the party that holds the entire right, title and interest in this application is the assignee, Nippon Foil Manufacturing Co., Ltd.

RELATED APPEALS AND INTERFERENCES

No appeal or interference is pending in any related application.

STATUS OF CLAIMS

Claims 1, 2 and 4 are finally rejected. No claims are allowed.

STATUS OF AMENDMENTS

The final rejection was on June 1, 2000. A Request for Reconsideration with Amendment and a Notice of Appeal was filed on December 1, 2000. In the amendment, claim 1 was changed to replace "non-regular" to "complicated." This was

because the examiner held the change of "complicated" to "non-regular" as introducing "new matter" into the application. Also, claim 4 was amended to delete "a given" in line 4.

The amendment to claim 1 (and presumably claim 4 as well) was not entered as indicated in the Advisory Action issued December 18, 2000.

SUMMARY OF THE INVENTION

(page and line references are to the specification)

The present invention relates to a current collector for use in a secondary battery (pg. 1, lines 6 and 7). When coating a surface of a metal foil, such as aluminum foil or copper foil with active material, the metal foil and the active material are difficult to integrate or attach to each other, with the active material dropping out relatively easily. In the preparation of a secondary battery, if a part of the active material, drops out at the time of winding then positive electrode and the negative electrode, there arises a problem of not being able to obtain a secondary battery of a desired capacity. If a part of the active material drops out after the preparation of the secondary battery, there arises another problem that the charge and discharge capacity of the secondary battery is gradually reduced. (pg 1, lines 24 and 25, to pg 2, lines 1-11).

The present invention effectively prevents the active material from dropping out by improving the adherence between each periphery or each inner wall of the penetrating holes and the active material (pg 3, lines 12-15). The current collector according to the present invention is provided with penetrating holes of complicated shape. The invention also relates to a method of producing the current collector (pg 3, lines 20-22).

The current collector according to the present invention satisfies a set of expressions (pg 4, lines 2-4). When these expressions are satisfied, the penetrating holes have no burrs. According to the method, a metal foil is passed between a concavo-convex roll and a smoothing roll under a predetermined pressure. The holes are formed at the given pressure by the plurality of convex parts on the concavo-convex roll. The metal foil with the holes is then passed between a pair of metal smoothing rolls to remove the burrs. (pg 7, lines 24 and 25 to pg 8, lines 1-25).

ISSUES

There are two issues in this appeal, namely, (1) are claims 1, 2 and 4 unpatentable under 35 USC 112, second paragraph as indefinite because of the term "complicated;" and because of incompleteness; and (2) are claims 1, 2 and 4 unpatentable under 35 USC 103(a) over Jenkins.

GROUPING OF THE CLAIMS

Claims 1 and 4 are in independent form, while claim 2 is dependent on claim 1.

Claims 1 and 2 are directed to the novel current collector, and claim 4 is directed to the method for producing the current collector.

ARGUMENT

(1)

The term "complicated" or "non-regular" are definite and in full compliance with the requirements of 35 USC 112 and claim 4 is complete.

The metallic foils according to the present invention serve as current collectors in, for example, a lithium secondary battery or a lithium-ion battery. The foil desirably has holes (penetrating holes) which penetrate the foil. The hole can have a smooth

surface defining its perimeter or it can have a surface which is not smooth. The term used to describe the "not smooth" surface was originally "complicated." This term was found by the examiner to be objectionable because "[c]omplicated generally means difficult and it is unclear what a complicated or difficult shape encompasses." (Page 4, of the Office Action of October 7, 1999.). To overcome the objection, "complicated" was modified in the specification to "complicated or irregular," and to "non-regular" in claim 1. These modifications, it was believed, would clarify any confusion, which apparently it did not. Still, the condition of "irregular" or "non-regular" is, it is respectfully submitted, clearly shown in Figs 1 and 2, even if it is found nowhere else.

The examiner in the latest Office Action takes the position that "or irregular" in the specification is objectionable, and "non-regular" in claim 1 is rejectable. This leaves applicant with no place to go, except back to "complicated," since, presumably, the illustration in Figs 1 and 2 is not supportive, which in fact they are.

Also, the term "complicated" means more than that which the examiner expresses as her understanding. The term "complicated" could mean "difficult" as suggested by the examiner, and such a meaning would not lend much to and understanding of the surface under consideration. However, "complicated" also means "having many interconnected parts," or "marked by an interrelation of diverse and often numerous parts..." (Webster's Third New International Dictionary, page 465, copy enclosed). Considering these definitions, lends more meaning to the concept of the shape of the surface defining the holes. Couple this with Figs. 1 and 2 and, it is respectfully submitted, no confusion should exist.

It is respectfully submitted, therefore, that the term "complicated" should be accepted if "irregular" is not. In either case, those skilled in the art should have no difficulty in understanding what is intended.

Regarding the shape of the hole, the point is that it is not smooth. See the specification on page 6, lines 19 - 224 which clearly makes the distinction. The holes according to the present invention have a surface which is something other than smooth. What term should be used? The term selected by applicant to identify the surface of the hole was "complicated." If this term is not definite, then applicant should be permitted to chose another term, such as, "non-regular." Applicant should not be told that the surface of the hole cannot be described and therefore the application is fatally defective, but this is precisely what the prosecution of this application has concluded. The term "complicated" is considered "indefinite" and the term "non-regular" is considered as "new matter." Clearly, then, any term other than "complicated" would, employing the examiner's logic, constitute "new matter." Accordingly, if the term originally chosen by applicant to define the shape is not acceptable to the examiner, then no term is. That is not the intent underlying 35 USC 112. If the examiner believes that another term would be more appropriate, applicant is prepared to listen. The procedure is not suppose to be an adversary procedure but an ex - parte procedure. Applicant is willing to change the term to one that is acceptable to the examiner.

To understand claim 4, reference is made to Japanese patent 3-13926. A copy of this patent and an English language abstract are being submitted herewith. Note Fig. 2 of this patent which shows the roll 3 penetrating the foil 1 to form holes. The roll 3 corresponds to a concavo-convex roll like that used in the present invention. All that

is needed is rotation if the roll is configured as a concave-convex roller.

(2)

Claims 1, 2 and 4 patentably distinguish over Jenkins

Claim 1 defines a current collector with very specific parameters, namely, two equations which must be satisfied to define the surface shape of the penetrating holes. If these equations are not disclosed in Jenkins et al, it is not seen how Jenkins et al can render claim 1 unpatentable. Jenkins et al has no reason to even contemplate the noted equations, because their holes do not have a complicated or irregular shape. Nor is it proper to suggest that Jenkins et al would contemplate the two equations because they are made with a punch die and not a concavo-convex roller.

A reference which teaches a plate with punched holes is not sufficient, it is respectfully submitted, to render a foil with a plurality of penetrating holes satisfying two specific equations, obvious.

Regarding claim 4, it is the convex parts that create the penetrating holes, and the penetrating holes are those defined in claim 1. Claim 4 is therefore a product-by-process claim and as such enjoys the distinctions noted above relative to claim 1. Jenkins et al. cannot render claim 4 unpatentable in the same way that it cannot render claim 1 unpatentable. Also, Jenkins et al. does not teach the step of passing the metal foil with the penetrating holes formed therein "further through between a pair of metal smoothing rolls" for the purpose of de-burring the penetrating holes at their periphery.

SUMMARY

The use of the term "complicated" is not indefinite since it distinguishes the

U.S. Appl. 09/124,925

surface of the hole from one that is smooth, and those skilled in the art would have not difficulty in understanding what is intended.

The Jenkins et al. patent does not teach the claimed relationships recited, nor the convex parts that create the penetrating holes.

Accordingly, the Board should remand this application to the examiner with a finding that claims 1, 2 and 4 are allowed.

Date: March 30, 2001

as modified on October 24, 2005

Felix D'Ambrosio Registration No: 25,721

Respectfully submitted, ~

Customer Number 23364 BACON & THOMAS 625 Slaters Lane, Fourth Floor Alexandria, Virginia 22314 Phone: (703) 683-0500



<u>APPENDIX</u>

1. A current collector for use in a secondary battery consisting of a metal foil provided with a plurality of penetrating holes, each of which has a non-regular shape without burrs and satisfies the following expressions:

$$0.05 \le S \le 50$$

$$1.30 \le M/N \le 100$$

where: S is an area expressed in mm² of the penetrating hole, M is a peripheral length expressed in mm of the penetrating hole, and N is a peripheral length expressed in mm of a virtual circle having the area S of the penetrating hole.

2. A current collector for use in a secondary battery according to claim 1, wherein the thickness of the metal foil is in the range of 5 to 100 μ m.

Claim 3 (Canceled)

4. A method for producing the current collector of claim 1 for use in a secondary battery, comprising the steps of: passing a metal foil without a hole through between a concavo-convex roll having a plurality of convex parts and a smoothing roll under a given pressure; converting thereby portions of the metal foil without a hole and pressed by the convex parts of the concavo-convex roll into portions with penetrating holes; and passing the metal foil with the penetrating holes further through between a pair of metal smoothing rolls, whereby burrs produced at each periphery of the penetrating holes are removed.

complemented past of COMPLEMENT.

complement fixation n: the absorption of complement to the compound formed by the union of an antibody and the antiser for which it is specific occurring when complement is add to a mixture (in proper proportion) of such an antibody a antisen

complement fixation n: the absorption of complement to the compound formed by the union of an antibody and the antiaer compound formed by the union of an antibody and the antiaer compound formed by the union of an antibody and mixture (in proper proportion) of such an antibody an mixture (in proper proportion) of such an antibody and the antibody on mixture of known antigen and a serum indicator system to a mixture of known antigen and a serum indicator system to a mixture of known antigen and a serum indicator system to a mixture of known antigen and a serum suspected to contain the specific notifier. See WASSEMANN TEST complements as posted to thill the see WASSEMANN TEST complements as posted to the services of the servic

infinity complete solution n: GENERAL SOLUTION complete stop n: a set of organ pines extending throughout the compass of the



complete stop n: a set of organ pipes extending throughout the compass of the manual com-pletion (kam'plēšhan) n-s[L completion pletion-, completio filling, Ir. completus (pust part. of connelers to complete) + (ion-, io-ion — more at ICOMPLETE]

1: the act or action complete (completing completion geomplete, or making complete geoming complete, or making complete (his ~ of the late artist's unfinished masterpiece): specif : a forward pass caught by the receiver (out of 10 attempted passes, there were 5 ~ c) 2: the quality or state of being complete: FOLFILLMENT (his desires having reached ~) completion test n: an intelligence test requiring that the one to be tested complete a whole (as a sentence or picture) from which certain parts have been omitted com-ple-tive \(\chi \)(com-pletivity) adj (LL completivus, fr. L completus + -\(\chi \) vis - v

combination | Carlos | adj : lacking color : PALE | complex-inty | kim | pleksad-ē, kam. | atē, -i\ n = E | 1 : the | complex-i-ty | kim | pleksad-ē, kam. | atē, -i\ n = E | 1 : the | complex | compostreness, intricacy | che | complex | compostreness, intricacy | che | complex | an intricacy | che | complex | an intricacy or complication (the political complexities of his office) | complex-ly | (')klim | plekslē, kom'-, -i\ adv : in a conuplex manner

complexity \(\frac{1}{2}\text{manplexite}\), some in the philosophy of the 17th century English philosopher John Locke results from the combination of simple ideas of several kinds (as beauty, gratitude) — contrasted with simple mode; compare \(\frac{1}{2}\text{mode}\) complex ness \(\cdot\) snos \(\chi\) n = S: \(\chi\) COMPLEXITY complex number or complex quantity \(n\): a number or expression of the form \(a+b\)i, where \(a\) and \(b\) are real numbers and \(\frac{1}{2}\text{mode}\).

i= $\sqrt{-1}$ complex plane n: a plane whose points are identified by means of complex numbers complex number a+ib whose absolute value $\sqrt{a^2+b^2}$ is 1 complex. by the complex of compl

phicated aggregate of inding ~ of her own imaginings — John Farrelly)

complex variable n: a number or expression of the form x+iy where i=√-1 and x and y are in general variables

com.pli.a.ble \kmipllebol\adj(comply + able) 1 archaic

com.pli.a.ble \kmipllebol\adj(comply + able) 1 archaic

disposed or ant to agree or yield: complust 2 obs: that may be reconciled — com.pli.a.bly \ble k adv

com.pli.ance \kmipllebol\adj(comply + able) 1 archaic

com.pli.ance \kmipllebol\adj(comply + able) 1 obs

a: civility b: friendly or happy agreement: HARMONY, CONCORO (~ between man and wife) 2a: the act or action of yielding to pressure, denand, or coercion: CONFORMANCE (the Counter Reformation was not a ~ with Reform but a defiance of it — H. R. Trevor-Roper) b: inclination or readiness to yield to the demands of others often in a service or spineless fashion (worthy men may be rejected because of their very virtues and unworthy men selected because of their ~ P. H. Douglas) 3: the quality or state of yielding to bending under stresses within the elastic limit; also: the amount of displacement per unit of applied force 4a: conformity in fulfilling formal or official requirements (a letter written in ~

2 obs : PLIANT — COIN-pli-antl-ly and corm-nil-ca-cy (*kiinplakaed, -iEk, -si\ n -PS [ft. complicate, r 'ter such pairs als complexed (the ~ ot his subject or state of being stage complexed (the ~ ot his subject m. 2: something hat its complicated (the ~ ot a watch) cormplexed (of the ~ other subject m. 2: something hat its complicated (the ~ ot a watch) cormplexed (of the .), that of certain beetless (coin-pli-cate) (*kinplakāt, usu -ād-+V\ w-ED/-inst/-s [L. complicatus] vi 1 obs a : to unte intimately by or us if by intertwining b : b fold or twist up together into or as if into a confused or one-strictable manner (his ideals were somethow complicated with selfish interest) 3 obs : to create esp. by ioning two or more elements : COMPOIND 2: to make complex, involved, or difficult (this ~s matters) \$ into bery complex, involved, or difficult (this ~s matters) \$ into bery complex, involved, or difficult (this ~s matters) \$ into bery complex, involved, or difficult (this ~s matters) \$ into his constitution of the more complex or severe (bacterial secondary invaders ~ into his more complexed (the more at phy) 1: made up of intimately united after (lod— more at Phy) 1: made up of intimately united parts (COMPLEX (a machine ~ of handmade gears) 2: DIFFICULT, involved (a ~ problem) 3 a : CONDUPLICATE b : folded longitudinally one or more times — used of insects wings complicated \-la,kād-àd, -ātaa ad (insects wings complicated \-la,kād-àd, -ātaa ad (insects wings complicated) 1: marked by an interrelation of diverge and often numerous parts, felements, notions, phases, or millicate or comprehend (the whole organization of machinery) 2: haying many interreomeched parts; not simple or east to feloricate or comprehend (the whole organization of machinery) 2: haying many interreomeched parts; not simple or east of interest of complicated red interest or one dependent upon a host of professionalized skills that link—Lewis Mumford) syn sec COMPLEX (com-plicated red some norm) in a complication or a detail of a character e

into and complicating the main thread of a plot 4 [F. fr. ML complication., complication fr. LL1]; a secondary disease or condition developing in the course of a primary disease or condition developing in the course of a primary disease or condition developing in the course of a primary disease or condition developing in the course of a primary disease or condition developing in the course of a primary disease.

Som. plice \times \text{kimplss.} \times \text{km-l. n-s} \text{KME.} \text{lr.} \text{MF.} \text{fr.} L. complic., complex partner, confederate, fr. L. com. + LL -plic., -plex (akin to L. plicare to fold) archaic : an associate or accomplice exp. in crine \text{kmin plicate.} \text{ a.i. d. i. n. -is } \text{ F. complicité, fr. complice or control \text{kmin plicate.} \text{ a.i. d. i. n. -is } \text{ F. complicité, fr. complice or control \text{ complise proposition or participation in or us if main in the past of Complicité, or set tous (fr. l. complier proposition past of Complicité, n. s. [comply + -erl] 1: one that complies 2 obs : Compress of the past of Complicité, n. s. [complie past of Compliment or complex complises pres dé sing of Compliment n. s. [complie et of fill up) + -miento what is due, be contenue (fr. l. complère to fill up) + -miento what is due, be contenue (fr. l. complère to fill up) + -miento what is due, be contenue (fr. l. complère to fill up) + -miento what is due, be contenue (fr. l. complère to fill up) + -miento admiration (ceuch candidate was introduced with the usual activation (feuch candidate was introduced with the usual consideration (feuch candidate was introduced w

JP3-1392.6

TITLE: Manufacture of perforated metal plate

ABSTRACT: To obtain a perforated metal plate without generating a material loss by making a hole by a roll having a lot of projection, turning back its return by a scratching jig, and thereafter, executing a rolling by a roll.

As for a perforating roll 3, a projection 2 is provided in a line in the circumferential direction and the width direction,

A metal plate 1 is fed continuously between the roll 3 and a recieving roll 11. A hole 4 is made by the projection 2, and a return 6 is cut and raised. The metal plate 1 is fed continuously and the return 6 hits against the tip of a scratching jig 5. The return 6 is turned back, and thereafter, rolled by a rolling roll 7. The metal plate 1 is rolled thinly and elongated, and also the return 6 is allowed to gnaw as one body with the metal plate 1, and a perforated metal plate having no burn is obtained. Since there is no punching dust, no material loss is caused, and no burn is generated, therefore, this metal plate can be handled easily.

⑩日本国特許庁(JP)

① 特許出願公告

報(B2) 公 ② 特 許

平3-13926

®Int. Cl. 5

識別配号

庁内整理番号

2949公告 平成3年(1991)2月25日

28/10 B 21 D 28/12 31/02 35/00

6689-4E Z 6689-4E 6689-4E 6689-4E

発明の数 1 (全3頁)

孔明き金属板の製造方法 母発明の名称

半 昭62-7741

頭 昭58-249601 四符

開 昭60-133936 ⑤公

昭58(1983)12月23日 頣 @出

@昭60(1985)7月17日

心発 明 耉 吉

明 痃

大阪府門真市大字門真1048番地 松下電工株式会社内 大阪府門真市大字門真1048番地

松下電工株式会社内

忠 有 馬 明·者 贋 回発

 \blacksquare

大阪府門真市大字門真1048番地

松下電工株式会社 ⑦出 顋 人

長七 弁理士 石田 個代 理 人

審判官 影山 秀 一 審判官 澁 井 審判長 佐々木 睛康 器判の合議体 実公 昭42-15992 (JP, Y1) 多参考文献

1

动特許請求の範囲

金属板を連続的に送つて多数の突起を有する 孔明けローラにて孔を明け、次いで引つかき冶具 にて孔を明けた返りを折り返し、次いで圧延ロー ラにて圧延して返りを金属板に食い込ませて全面 に亘つて均一な厚さにすることを特徴とする孔明 き金属板の製造方法。

発明の詳細な説明

[産業上の利用分野]

本発明は金属板の全面に多数の孔が明いた孔明 10 き金属板を連続的に製造するのに用いる技術に関 するものである。

[従来の技術]

従來、金属板の全面に多数の孔を明ける場合、 打ち抜き角が出て打ち抜き角の分だけ材料ロスと なり、また打ち抜いたときばりができるという欠 点があつた。

[発明が解決しようとする課題]

て、本発明の目的とするところは材料ロスなく確 実に孔を明けることができると共にばりが出ない 孔明き金属板の製造方法を提供するにある。

[課題を解決するために手段]

連続的に送つて多数の突起2を有する孔明けコー ラ3にて孔4を明け、次いで引つかき治具5にて 孔4を明けた返り6を折り返し、次いで圧延ロー ラ7にて圧延して返り6を金属板1に食い込ませ 5 て全面に亘つて均一な厚さにすることを特徴とす

2

[作用]

5.

金属板1に孔4を明けるとき本来打ち抜き屑と なる部分を返り6として形成し、この返り6を孔 4以外の部分に折り返して返り6を圧延にて金属 板1に食い込ませることができて、打ち扱き屑を なくして材料ロスなく孔明き金属板8ができる。 [実施例]

3 は孔明けローラであつて、外周に多数の鋸歯 プレス等による打ち抜きによつて行つていたが、15 状の突起2を周方向及び幅方向に列設してある。 つまり第1図に示すように外周に鋸歯状の突起2 を周方向に全周に亘つて設けたものを幅方向に適 当な間隔を隔てて複数列設けてある。この孔明け ローラ3の上方には孔明けローラ3と平行にゴム 本発明は叙述の点に鑑みてなされたものであつ 20 ローラのような受けローラ 1 1 を配置してあり、 孔明けローラ3と受けローラ11を転接させてあ る。孔明けローラ3及び受けローラ11の両端の 軸は夫々軸受け板12に回転自在に支持してあ る。この受けローラ 11の前方(金属板1の進行 本発明孔明き金属板の製造方法は、金属板 1 を 25 方向を前とする)には引つかき治具 5 を配設して

- 31 -

あり、この引つかき治具5は断面菱形状に形成さ れ下端が鋭角に尖つている。引つかき治具5の下 方には金属板 1の板厚の隙間を介して受け台13 を配置してあり、受け台13の両端を引つかき治 具5の両端を連結板14にて連結してある。この 引つかき治具13の前方には一対の圧延ローラ7 を上下に配置してあり、圧延ローラブの両端の軸 を軸受け板 15に回転自在に支持してある。

孔明き金属板8を製造するにあたつては、孔明 けローラ3の手前から鋼板、アルミニウム板、鍋 10 板等の金属板 1 を連続的に送り、金属板 1 を孔明 けローラ3と受けローラ11との間に供給する。 すると回転する孔明けローラ3と受けローラ11 との間で第2図に示すように突起2にて金属板1 の長手方向及び幅方向に多数の孔 4 が明けられる と共に各孔4に孔4を明けたための返り6が第3 図に示すように形成される。 金属板 1 に孔4を明 けるとき金属板 1 が第 4 図に示すように孔明け口 ーラ3と受けローラ11との間を通過し、孔明け ローラ3の突起2に対応する部分だけ受けローラ 11が弾性的に凹んでスムーズに孔4が明けられ ると共に返り6が形成される。孔4を明けた金属 板1はそのまま連続的に送られて引つかき治具1 3と受け台13との間に供給され、引つかき治具 示すように返り6が折り返される。 次いでこの金 属板 1 が一対の圧延ローラ 7 間に供給されて圧延 される。すると、第6図に示すように金属板1が 薄く圧延されて伸びると共に返り6が金属板1に 一体に食い込みばりのない孔明き金属板8が形成 される。この孔明き金属板8は全体が帯板状であ り、全面に亘つて上下に貫通した孔4が形成され ており、例えば第7図に示すような樹脂被覆金属 板 9 の芯材として用いられる。樹脂被覆金属板 9 を形成する場合、押し出し成形機等で孔明き金属 版 8 の両面の全面に亘つてポリ塩化ピニルのよう な合成樹脂 10 が被覆される。この樹脂被覆金属

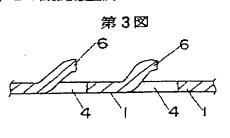
板9を形成したとき両面の合成樹脂10が孔明き 金属板1の孔4を介して一体につながり、両面の 合成樹脂 1 0 が孔明き金属板 8 の両面に強固に密 着し、合成樹脂10が剝離しない樹脂被覆金属板 9が得られる。このようにして形成された樹脂被 覆金属板 9 は帯板状である。この樹脂被覆金属板 9 は適当なの長さに切断して建築板として用いた り、また樋状の折り曲げ加工して雨樋として用い たり、その他の種々の用途に用いたりできる。

「発明の効果)

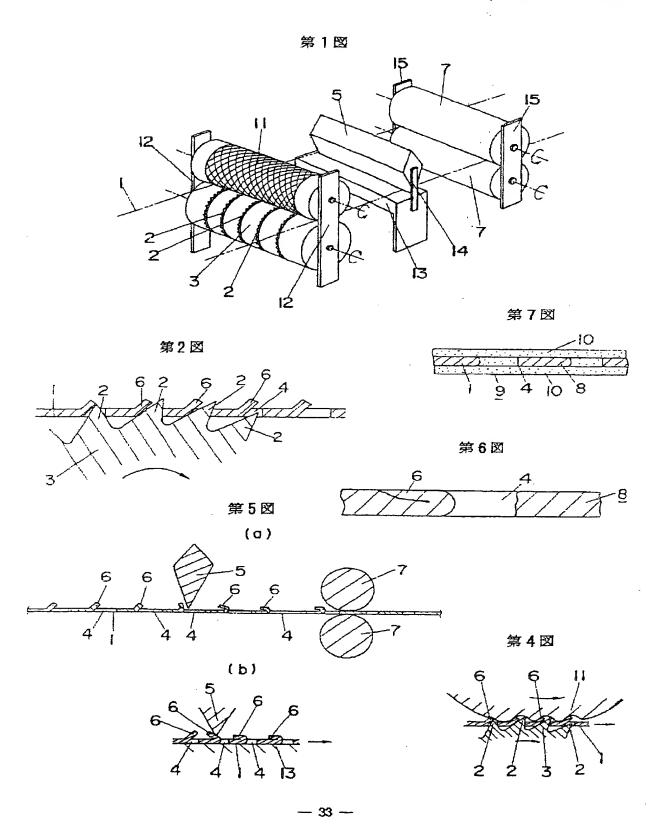
本発明は叙述の如く金属板に孔明けローラにて 孔を明け、引つかき治具にて孔を明けた返りを折 り返し、圧延ローラにて圧延して返りを金属板に 食い込ませて全面に亘つて均一な厚さにするの 15 で、確実に孔が明くのは勿論、孔明けにより生じ た返りを金属板に食い込ませてこの返りの材料分 だけ余分に金属板を展延できるものであつて、打 ち抜き層が出ず返りを有効利用して材料ロスをな くすことができるものであり、しかもばりが出ず 20 次工程での取り扱いがしやすいものであり、さら に圧延するとき孔により伸びのばらつきをなおし て均一に圧延できるものである。

図面の簡単な説明

第1図は本発明方法を実施する装置の斜視図、 5の下端である先端に返り6が当たつて第5図に 25 第2図は同上の金属板に孔明けローラにて孔を明 ける状態を示す断面図、第3図は同上の孔明けロ ーラにて孔を明けた状態の断面図、第4図は孔を 明けるときの孔明けローラと受けローラの状態を 説明する断面図、第5図aは同上の返りを折り返 30 す状態と圧延状態を示す断面図、第5図 b は返り の折り返し状態の断面図、第6図は同上により得 られた孔明き金属板を示す断面図、第7図は同上 の孔明き金属板に合成樹脂を被覆した状態の断面 図であつて、1は金属板、2は突起、3は孔明け 35 ローラ、4は孔、5は引つかき治具、6は返り、 7は圧延ローラである。



- 32 -



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/124,925 Group Art unit: 1745

Applicant: Koichi ASHIZAWA et al. Examiner: T. Dove

Filed: July 29, 1998 **Attorney Docket:**

ASHI3001/FJD

Title: (As Amended) Current collector with penetrating holes of complicated shape

use in a secondary battery and manufacturing process thereof for

RESPONSE

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

The Communication issued October 5, 2005 is noted.

In response thereto, submitted herewith is a copy of the BRIEF ON APPEAL as originally filed, with the modification noted below, and with the Appendix of the claims filed on December 20, 2004.

The claims in this Appendix include the phrase "non-regular," which was introduced by the amendment filed on March 7, 2000. In reply to this amendment to the claims, the examiner in her final rejection dated June 1, 2000, stated that "Claims 1, 2 and 4 are rejected under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification.....the term 'non-regular' is not described in the specification. It is unclear what 'non-regular encompasses'." In the BRIEF ON APPEAL submitted herewith, this statement by the examiner is discussed, otherwise the Brief is the same. In addition, the format of the Brief is in accord with the format in existence at the time the original Brief was filed.

The matter should now be settled.

No extension fees are deemed appropriate. If one is required, application

U.S. Appl. No. 09/124,925

requests that they be advised before the fee is charged to the undersigned's Deposit Account, which is 02-0200.

Respectfully submitted,

Felix J. D'Ambrosio Reg. No. 25,721

October 24, 2005